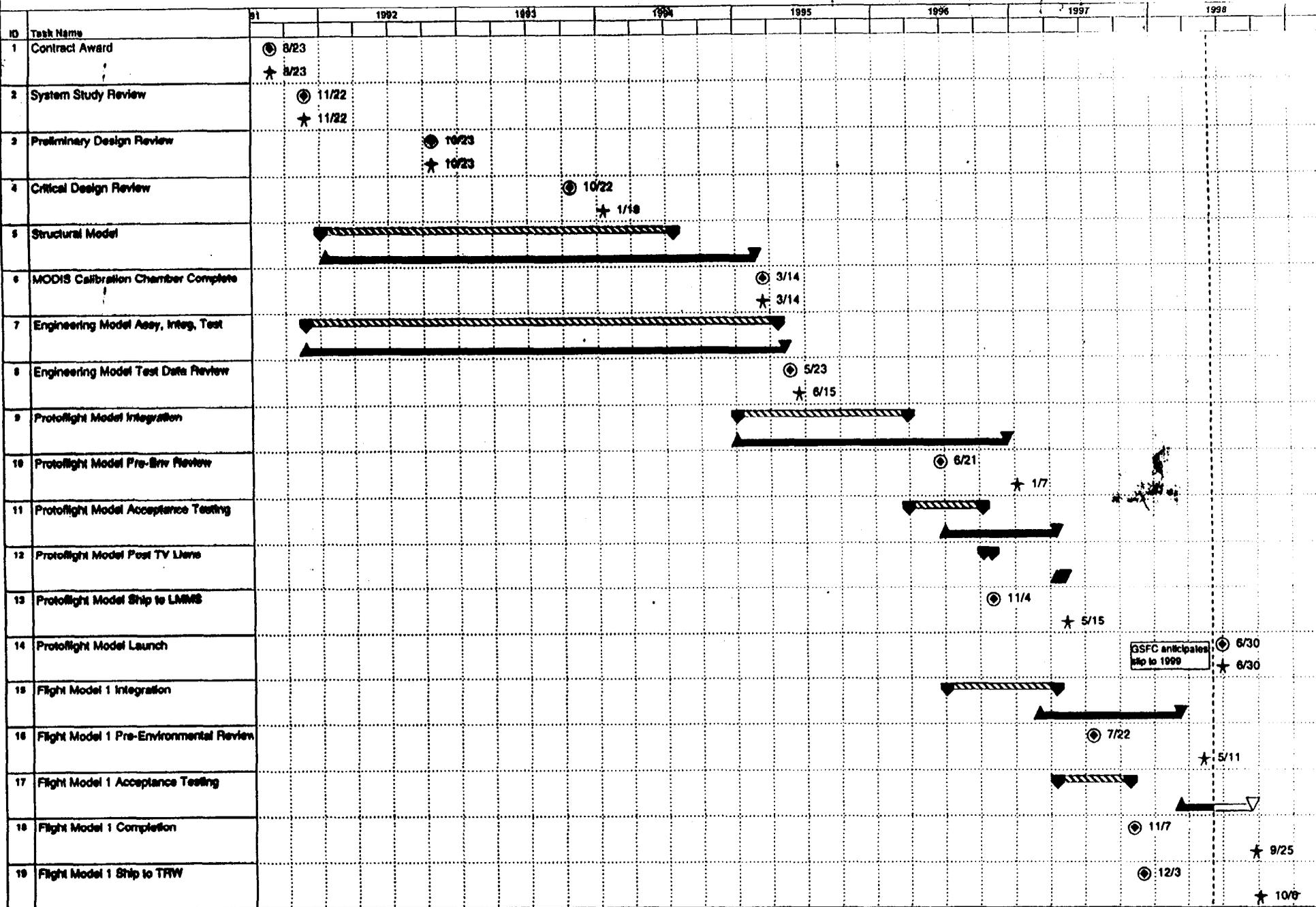


# Briefing on PFM and FM1 MODIS Sensor Status

Presented to the Science Team  
At the Plenary for the Science Team Meeting  
24-26 June 1998  
MCST/Guenther

MODIS Master Schedule



GSFC anticipates slip to 1999

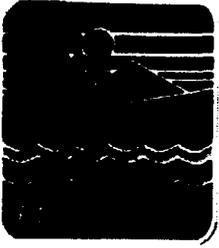
Prepared By: S. Parker  
Date: 6/4/96

Today's Est  
Baseline

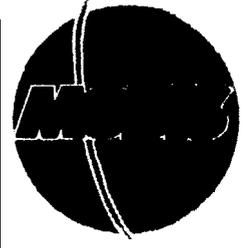
Progress  
Complete

Milestone, Baseline  
Milestone, Today's Est





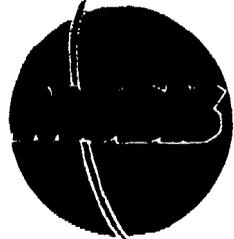
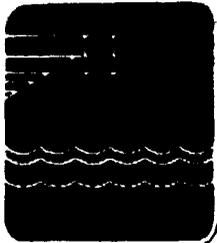
## Managers Summary - PFM Sensor



- Completed spacecraft T/V testing
- Test program still active at Valley Forge
- Flight Date uncertain
- Detailed handling of launch slip still TBD
- Repaired power supply (control processor reset) on sensor

### REMAINING SENSOR CONCERNS

- SWIR Second Sub-frame now Electronic crosstalk
- Thermal Model and operating temperature
- EEPROMS

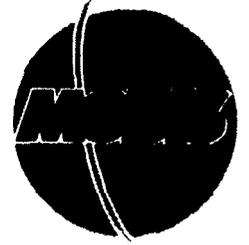


**MCST MAJOR CONCERNS  
PFM UNFINISHED BUSINESS--  
Requiring SBRS Inputs  
25 September 1997**

- Stray light (OBC-BB and for high scan angles, +50 degrees and higher) -- RESOLVED AS RESULT OF FM1 TESTING, NOT A PROBLEM
- SWIR radiometric behavior -- TOPIC OF LATER BRIEFINGS
- SIS round robin measurements -- COMPLETED IN JUNE
- Improvements on B21 calibration -- WILL EXPERIMENT WITH USE OF LUNAR VIEWS THROUGHOUT THE MISSION
- SWIR focal plane will not phase delay for registration -- NOT A REQUIREMENT AND REMAINS UNDONE
- Software for maneuvers (not an SBRS issue; funding issue resolved 9/25) -- LISTED AS REQUIREMENT EVEN FOR THE N.A.B. FLIGHT COMMAND & CONTROL SOFTWARE



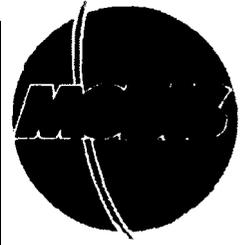
# Managers Summary - FM1 Sensor



- Significant rework completed
- Testing schedule
- Early results
- Issues
  - electronic crosstalk



# Significant Rework Completed



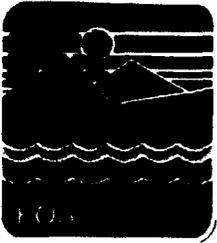
- **PFM**

- Fixes have been implemented to eliminate the potential for blown fuses due to phantom commands. The fixes included a software change and re-wiring of two circuit card assemblies (CCAs) in the FAM.

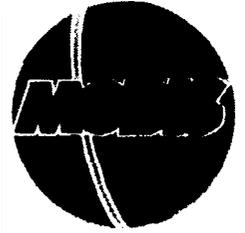
- **FM1**

- A more substantial fix has been implemented to eliminate “phantom commands”. This fix included, in addition to FAM re-wiring, re-work of CCAs in the MEM.

- The SWMIR out-of-band leak in the 5.3 $\mu$ m region has been eliminated; added blocking filter coating to cold window above SWMIR FPA. Verification of fix to occur in TV.



# Significant Rework Completed

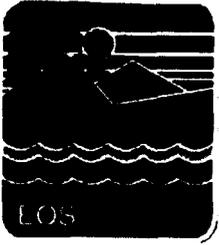


- **FM1 (cont'd)**

- **SWMIR light leaks affecting Bands 24, 25, 26 and potentially Band 5 have been incorporated; painted four stripes on FPA mask and one stripe on the IFA mask near Band 6. IAC Spatial and NFR data sets verify that the fixes worked.**

- **The LWIR out-of-band leak in the 11 $\mu$  m region has also been eliminated; dark layer coating was applied to sides/edges of Band 31 filter. IAC Spatial and NFR data sets verify that the fix was successful.**

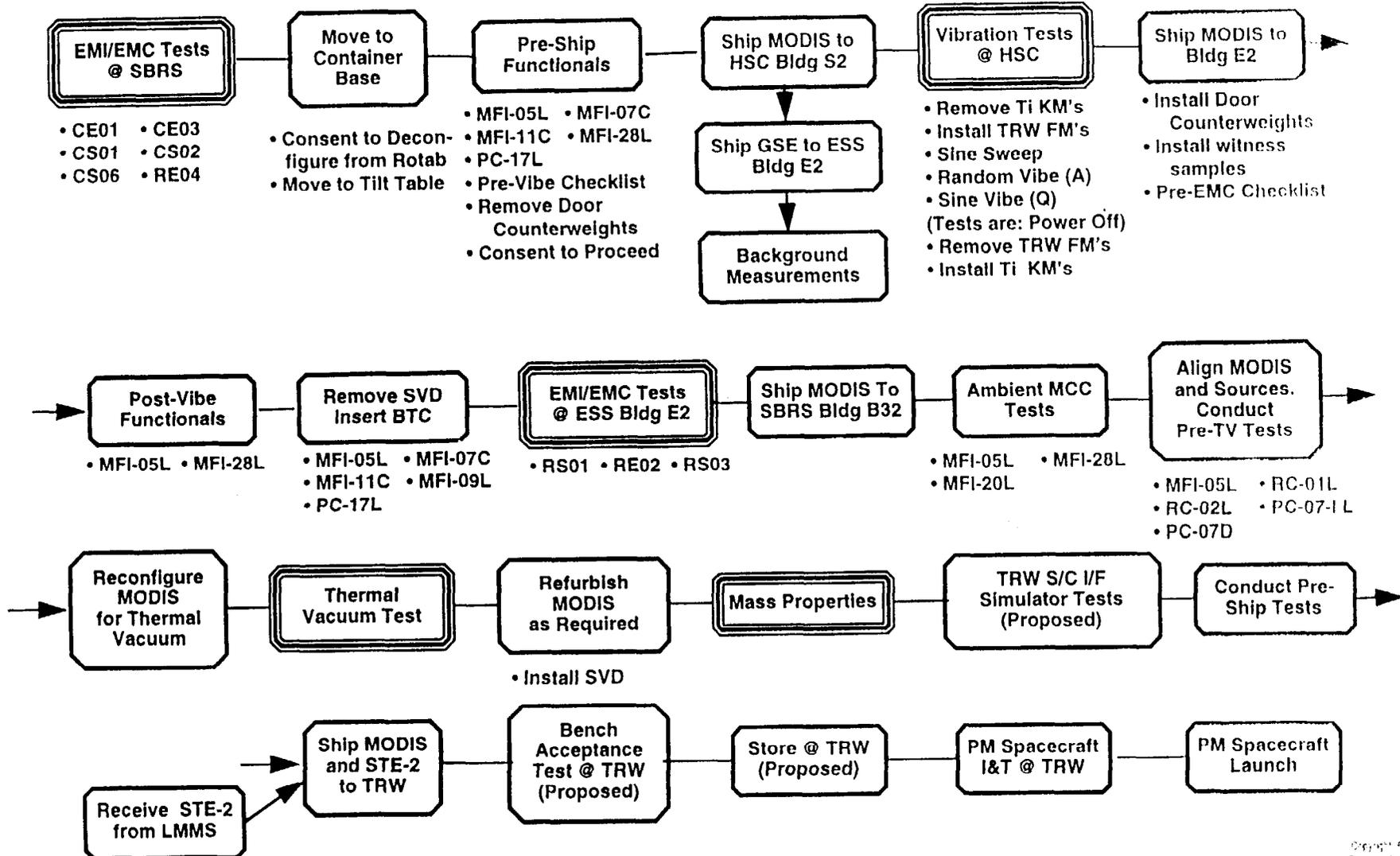
- **LWIR B27/B33 light leak fix incorporated; painted one stripe between Bands 27 and 33. IAC Spatial and NFR data sets verify that the fix was successful.**



# Significant Rework Completed



- **FM1 (cont'd)**
  - **The capability to perform a SWMIR scan-direction timing adjustment has been incorporated.**
  - **A reduced scatter Scan Mirror has been integrated.**
  - **Rework on the FDDI CCAs has occurred to eliminate the High Rate Science Data (HRSD) anomaly seen on the PFM instrument at Valley Forge.**



# Relative Spectral Reponse Test Requests and Changes

## Improvements:

- ZnSe window at nadir port enables T/V measurements of all M/LWIR bands
- Bands 20 and 31 measured at Cold, Nom and Hot instrument temp plateaus
- All M/LWIR bands measured at FPA NLT (~79K) and 83K to determine  $dl/dT_{fpa}$
- Additional blocking filter for LWIR OOB-ND measurements

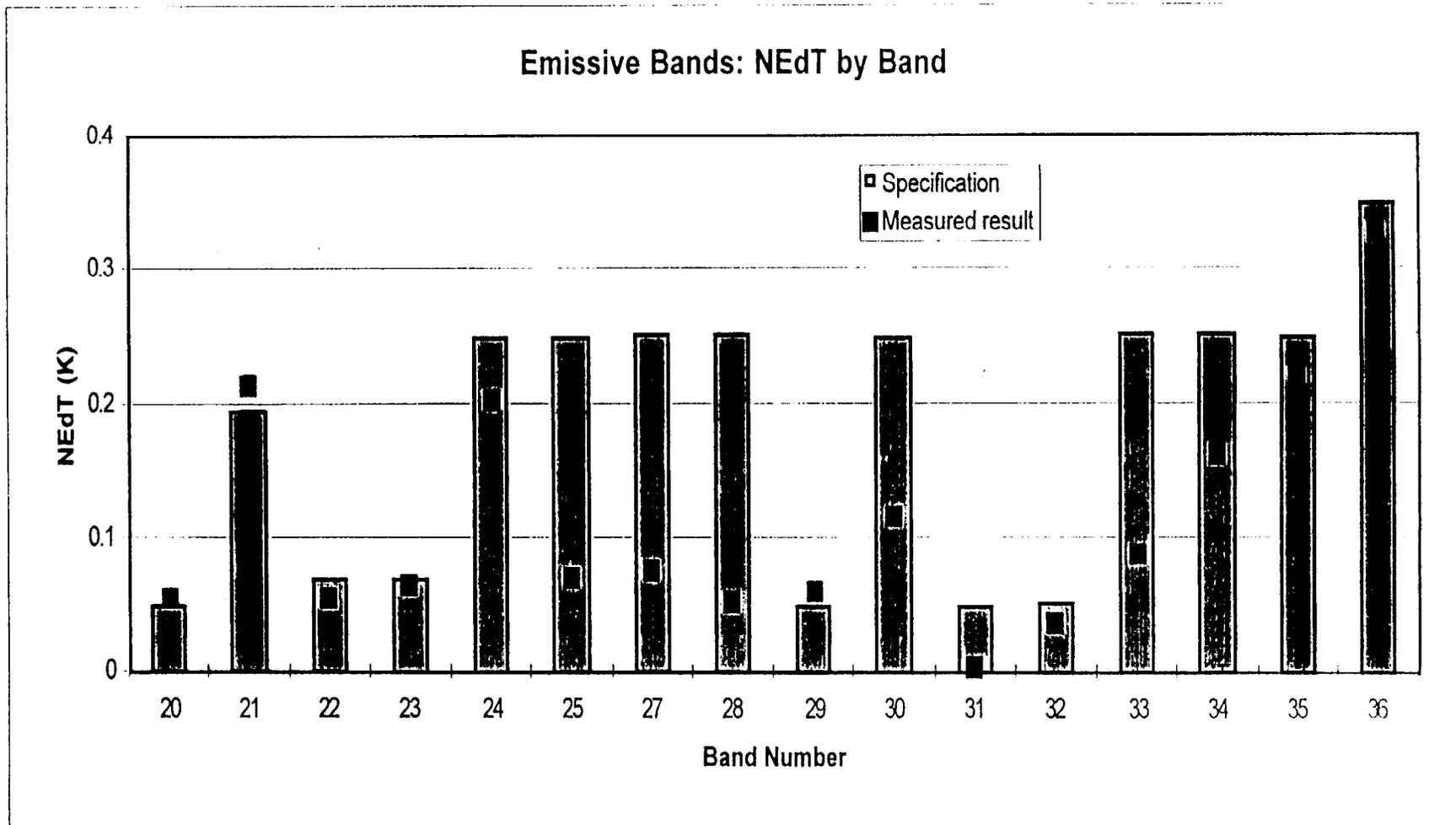
## Did not get:

- In-band RSR measurements at 2 temps for all M/LWIR bands
- Firm commitment to measure OOB-D at NLT to use enhanced responsivity at 79K to overcome ZnSe window transmission loss



# Preliminary NEdT Measurements Show Most Bands In Spec

# Raytheon

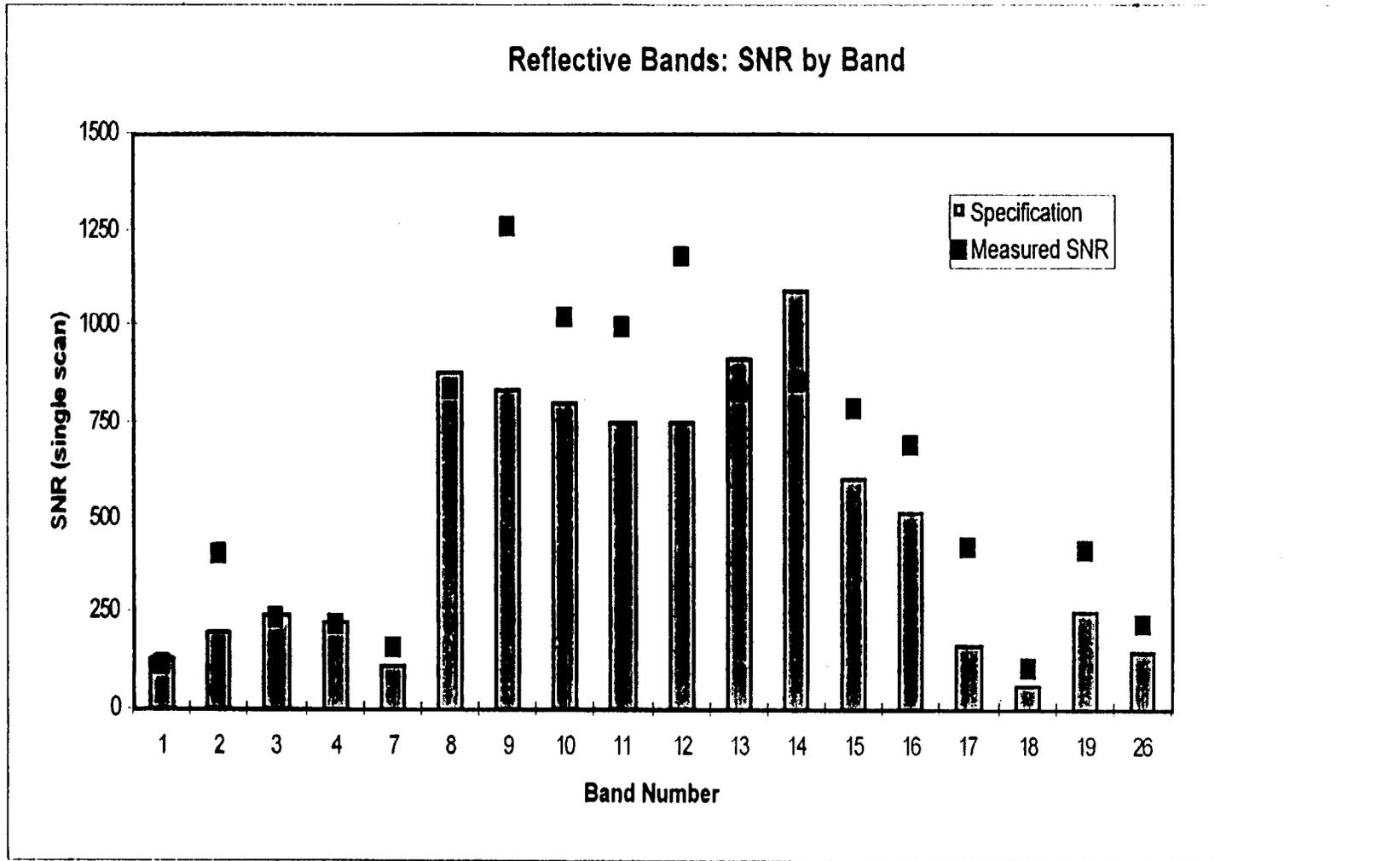


Waiver To Be Submitted If Necessary Pending TV Results



# Preliminary SNR Data Shows Most Reflective Bands Meeting Spec

# Raytheon



Waiver To Be Submitted If Necessary Pending TV Results

**■ Two-Cycle Timeline**

- Nominal Operating Temperature Extended +5C and -5C
- Current Nominal Temp is - 7° C TBR

**■ Optimized Spectral Tests Based On PFM Experience****■ Increased Acquisitions During MFI-09 Blackbody Test****■ Changes Currently In The Timeline (Need Final Approvals)**

- Repeat Band 20 and Band 31 Spectrals At Cold and Hot Plateaus
- Repeat MW/LW Spectrals At NLT, Nominal Plateau
- 400 Scan BCS Collects (One-Time At Nominal Plateau)

**■ Current Timeline at 46 Days**



## Summary of RVS performance

**Raytheon**

- FM 1 RVS performance characterization successful
- VIS / NIR / SWIR RVS characterization within internal spec
- MWIR / LWIR RVS characterization better than expected but not within internal spec
- Data reduction / analysis not complete
  - Use repeat data
  - Complete side B data reduction
- Continue with RVS uncertainty assessment
- Compare with NPL reflectance data when available